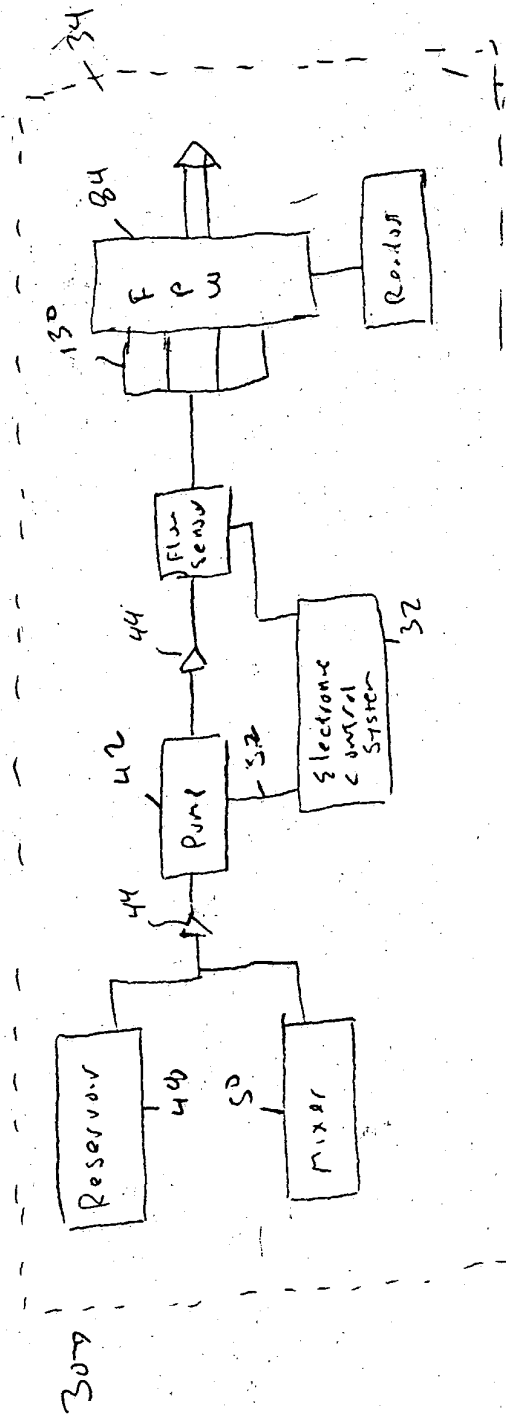
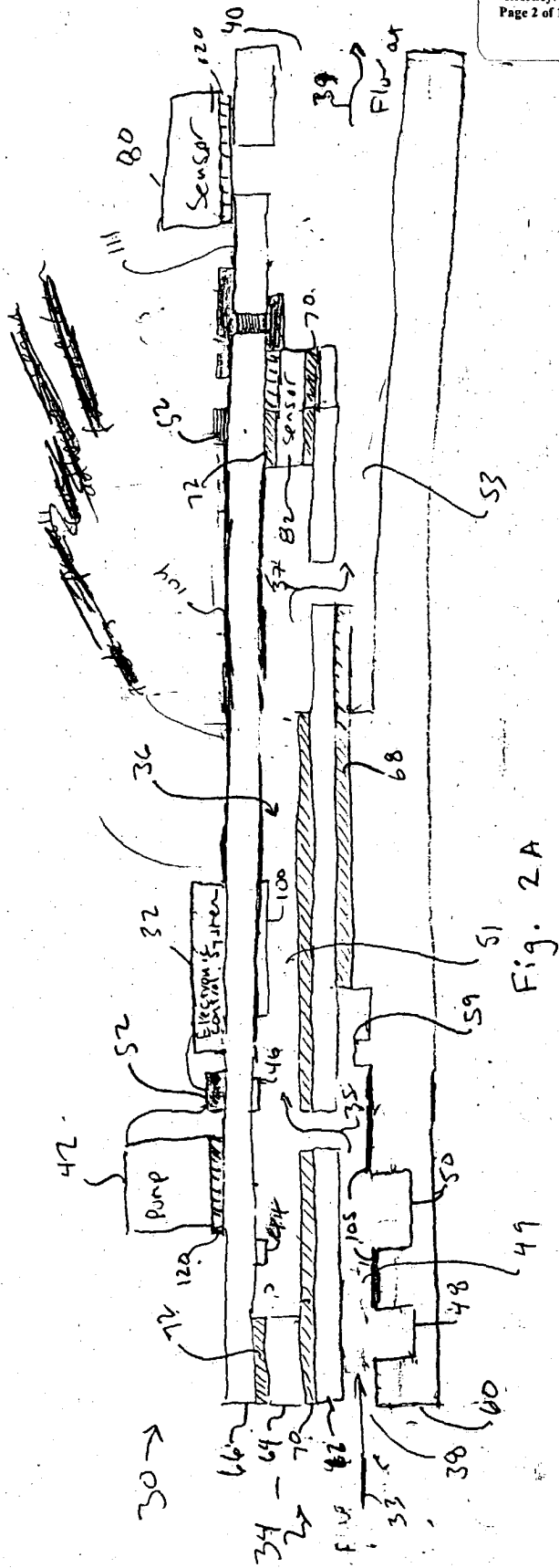


Fig. 1 (Prior Art)



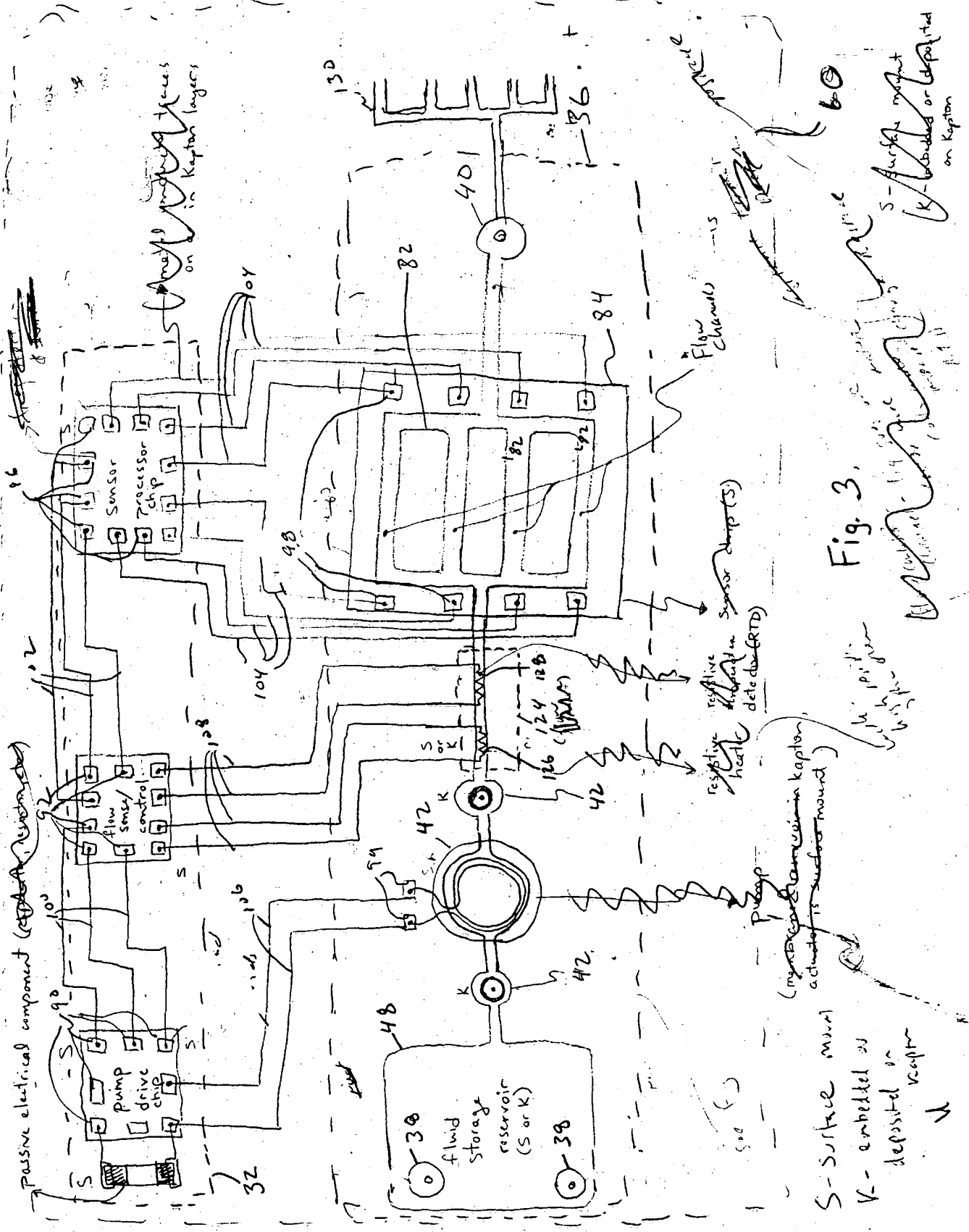
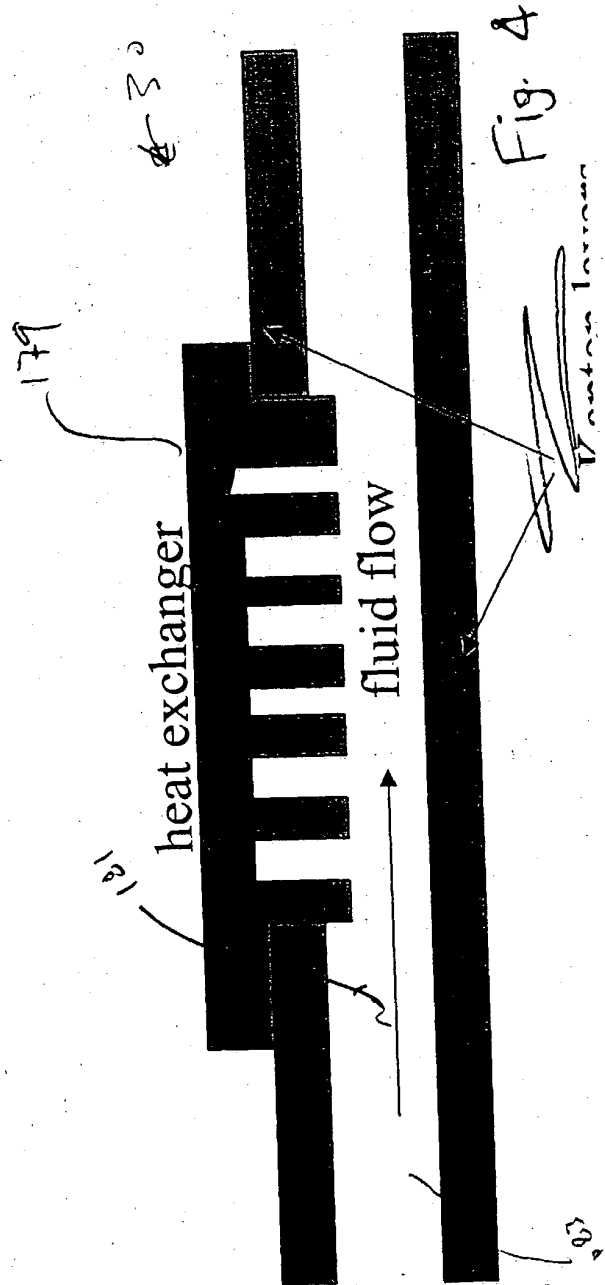


illustration of integrated heat exchanger



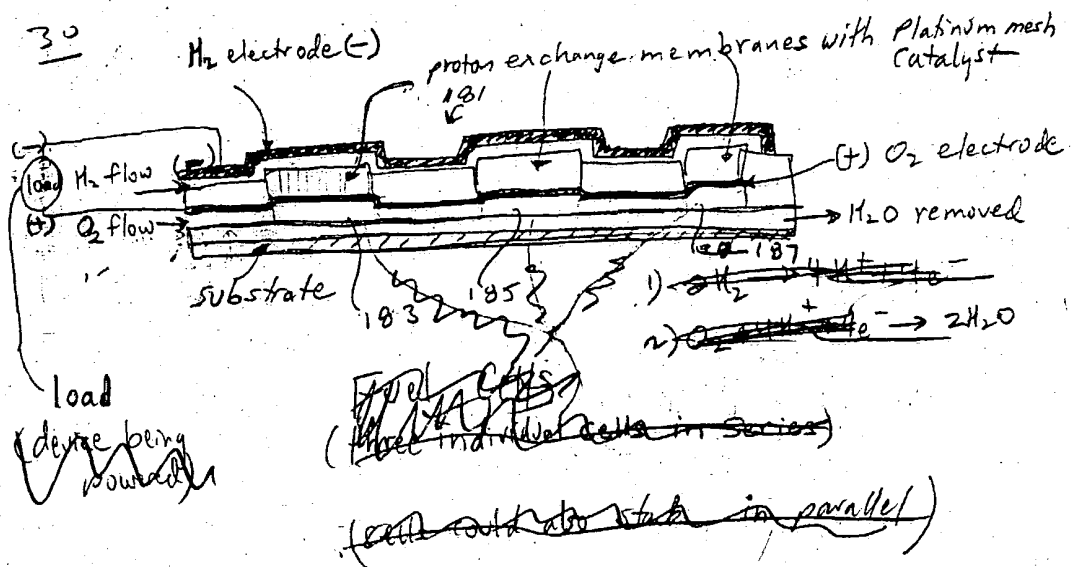


Fig. 5

FABRICATION METHOD

~~DRAPER~~
~~DYRE, HESNER, FIERING~~
 MAY 12, 2003
 RECESS

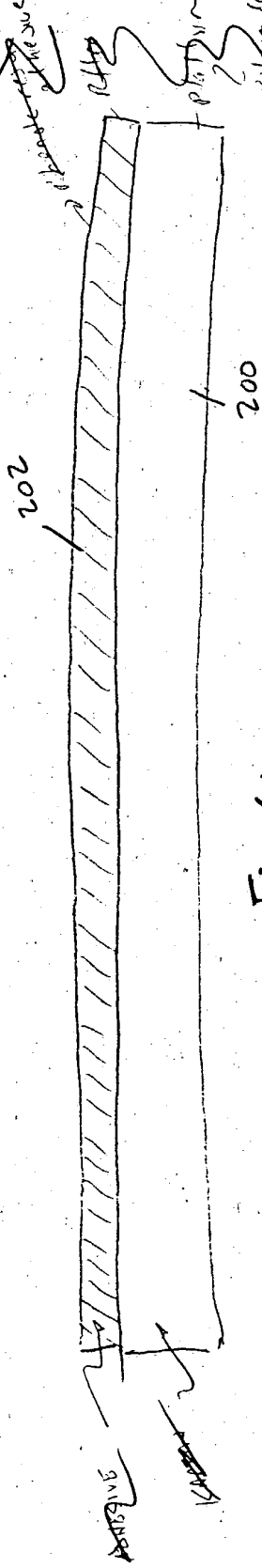


Fig. 6A

MATERIAL AS SUBSTRATE

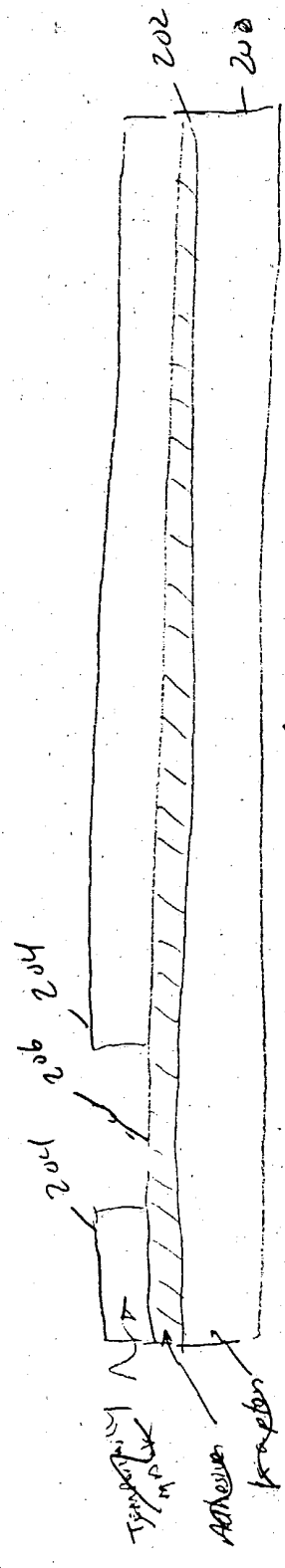


Fig. 6B

APPLY MASK (KAPTON)

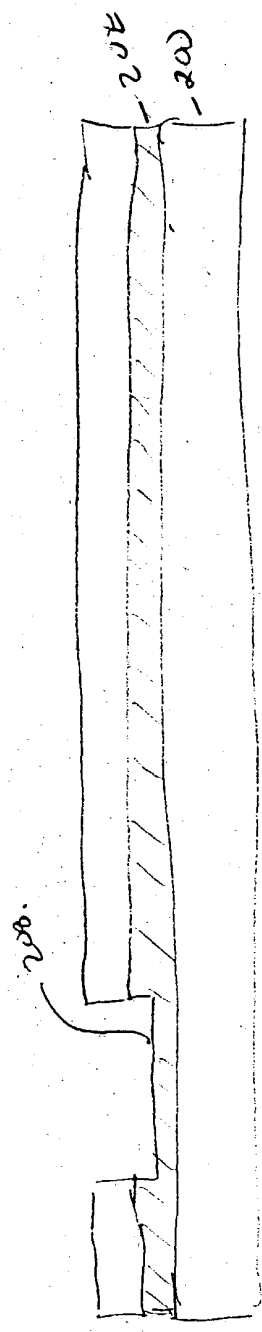
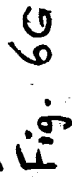


Fig. 6C

3) PLASMA ETCH RECESS (REACTIVE ION ETCH)

(1)



⑦ LAMINATE LAYERS TOGETHER



② REPEAT STEPS 6 AND 7 AS NEEDED TO BUILT STACK



① PREPARE TOP LAYER WITH METAL CONDUCTORS AS IN STANDARD CIRCUIT BOARD TECHNOLOGY

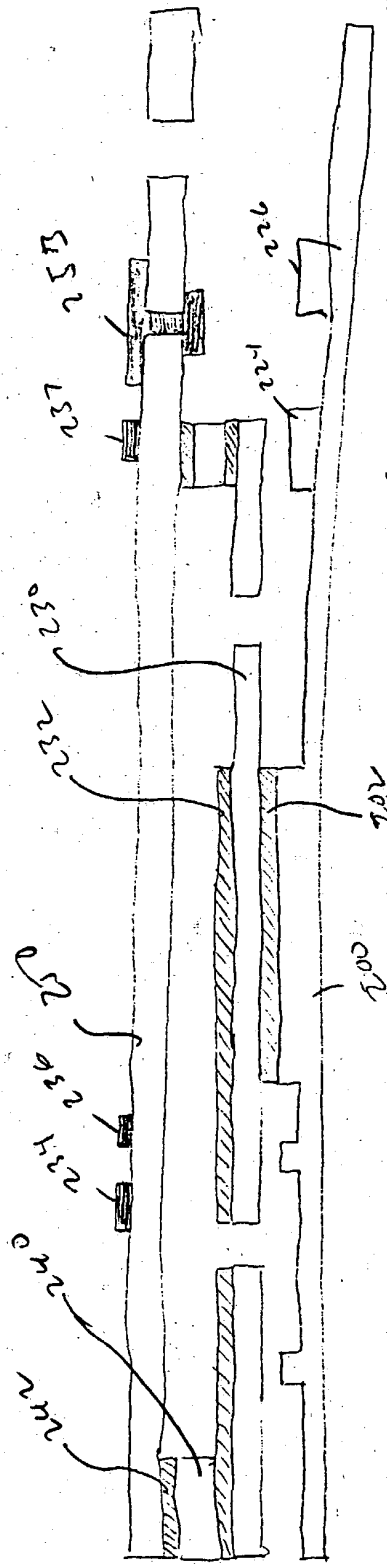
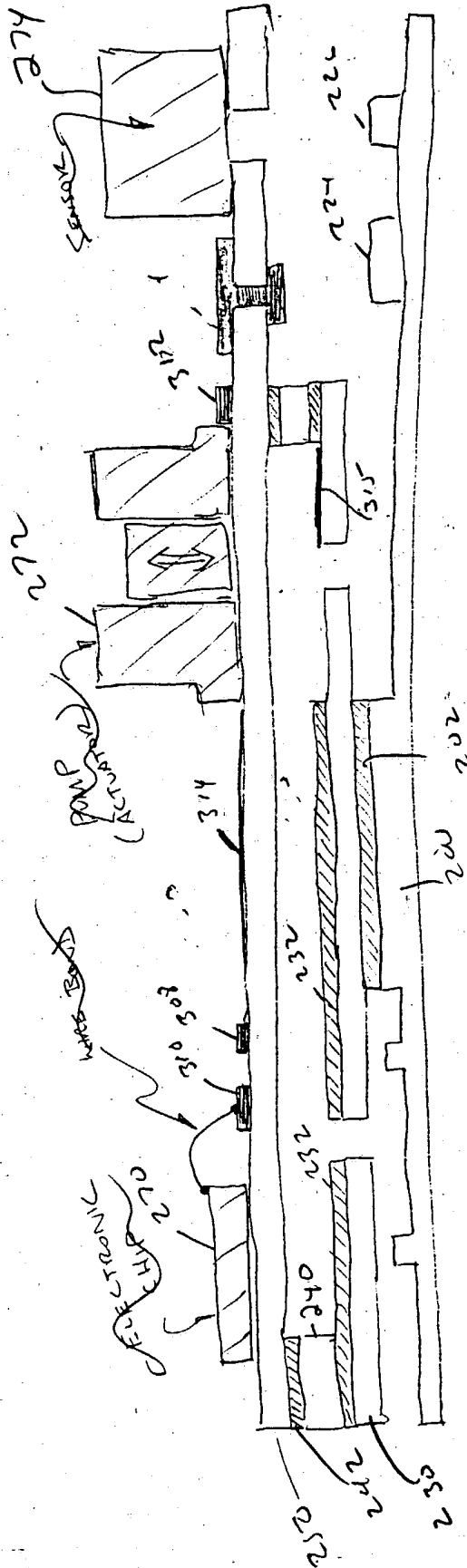


Fig. 6J

(10) ALIGN AND LAMINATE TOP LAYER



(11) ATTACH SURFACE MOUNT COMPONENTS SUCH AS PUMP ACTUATOR, SENSOR AND STANDARD ELECTRONICS. MAKE ELECTRONIC CONNECTIONS SUCH AS WIRE BONDS AND SOLDER JOINTS

Fig. 6K

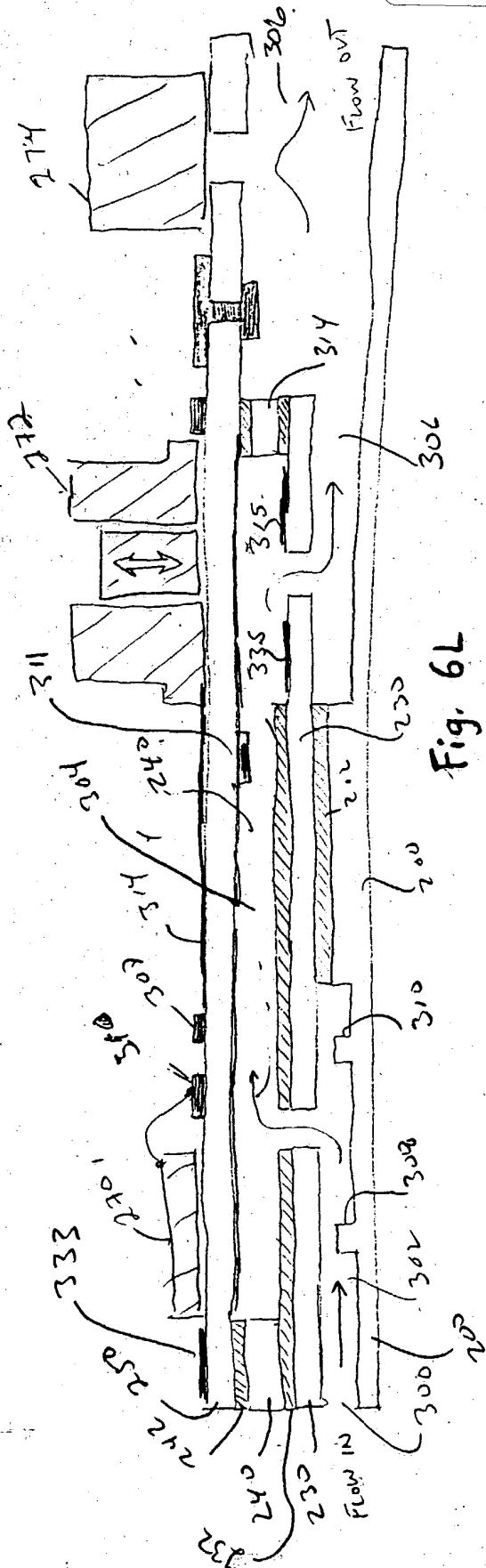


Fig. 6L

12 COMPLETED SYSTEM

TUBE, MESSEUR, FIERING
MAY 12, 2003

FABRICATION METHOD OF LAMINATING
AN ELECTRONIC COMPONENT INTO THE ELECTRO-FLUIDIC
SYSTEM

Applicant: Dubé et al.
Title: INTEGRATED ELECTROFLUIDIC SYSTEM AND METHOD
Docket No.: DR-352J
Attorney: Roy J. Coleman, Reg. No. 48,863
Page 12 of 14

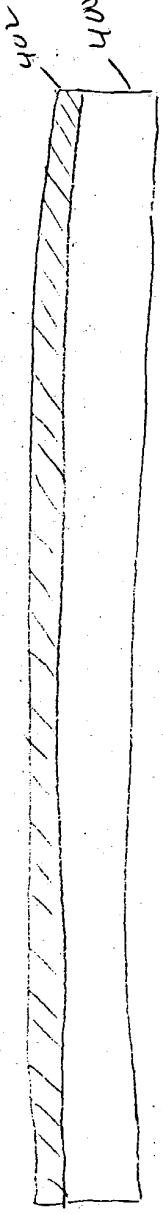


Fig. 7A

~~MATERIAL IS PURCHASED~~

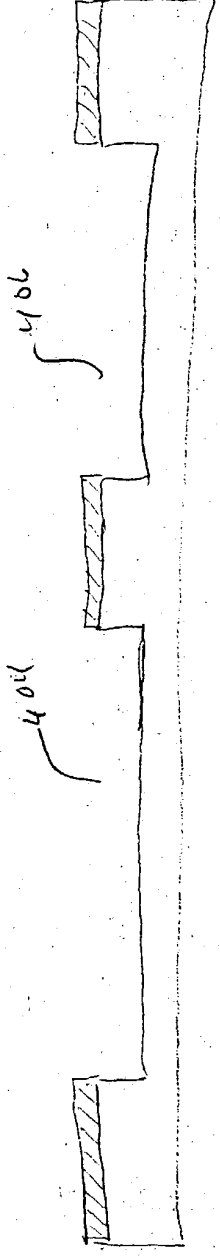


Fig. 7B

~~CASING MACHINE CHANNELS~~

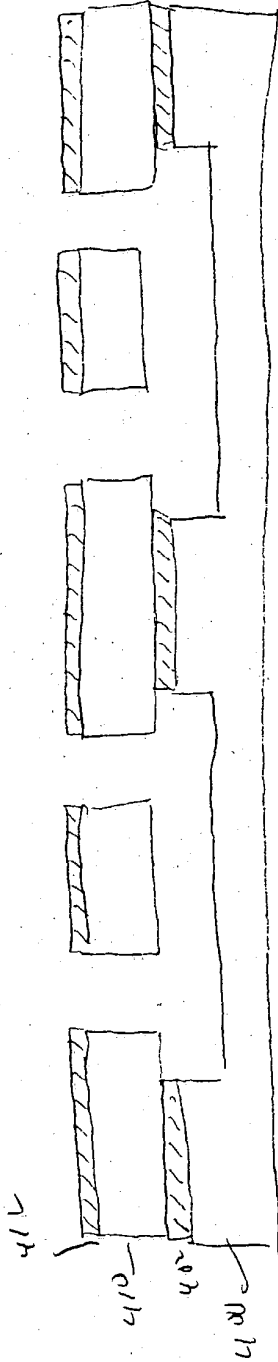


Fig. 7C

~~3 REPEAT AND LAMINATE FOR MULTIPLE LAYERS~~

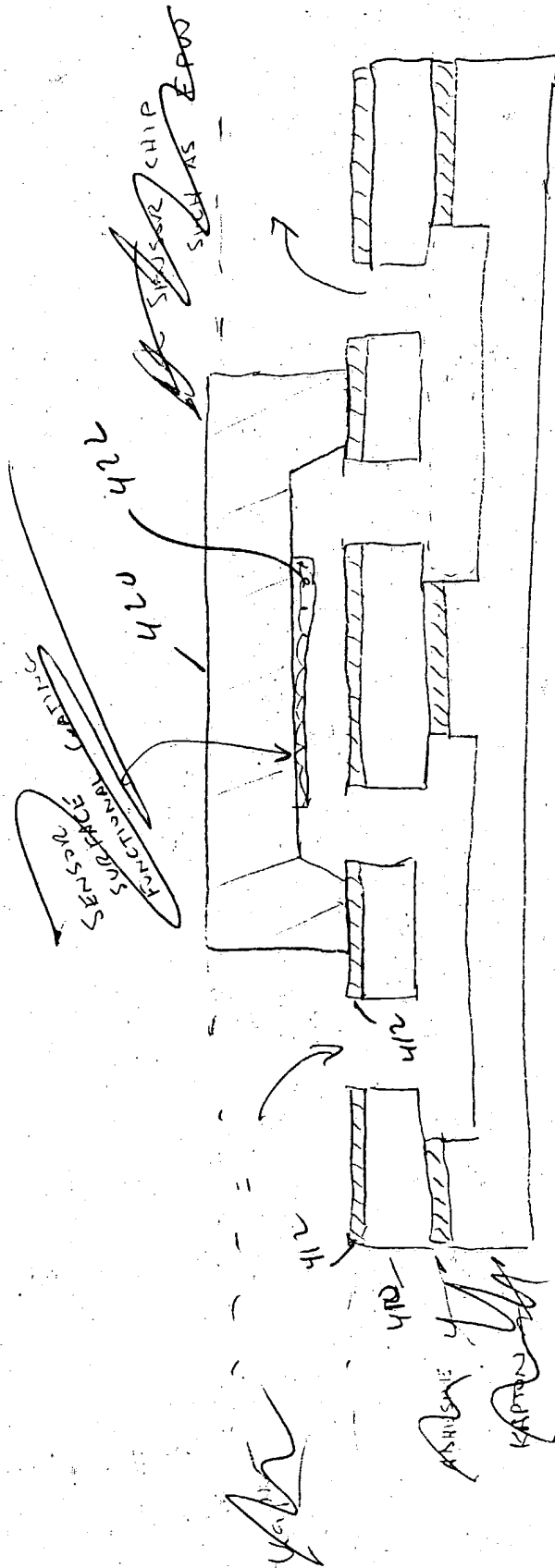
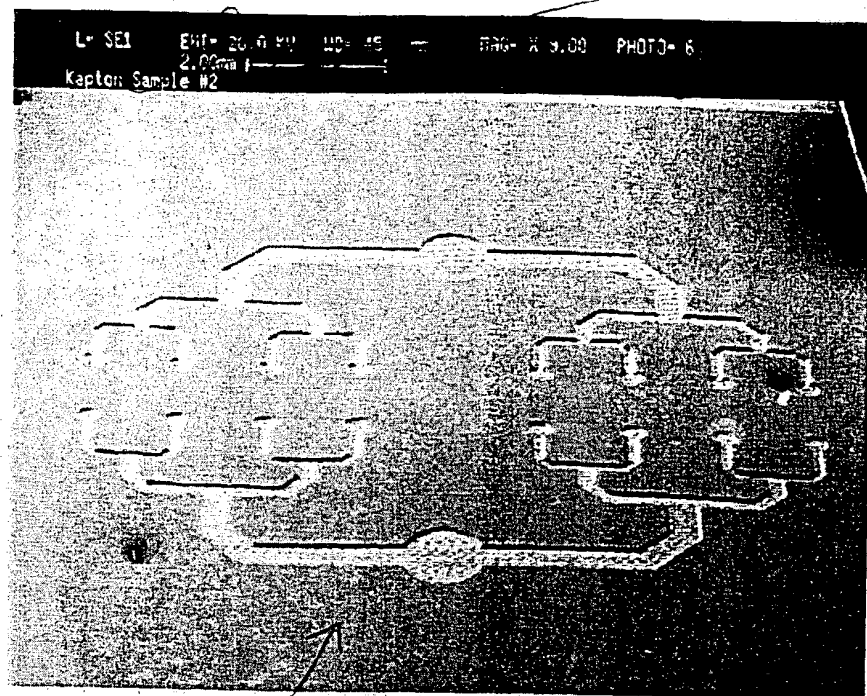


Fig. 7D

ALIGN AND LAMINATE SENSOR CHIP

NOTE, CHIP IS LAMINATED INSTEAD OF BEING ATTACHED BY SURFACE MOUNT METHOD



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Fig. 8